

A STUDY ON THE GROWTH STRATEGY OF  
LG AIR CONDITIONER BUSINESS

By

Jae-Sung Lee

THESIS

Submitted to  
School of Public Policy and Management, KDI  
in partial fulfillment of the requirements  
for the degree of

MASTER OF BUSINESS ADMINISTRATION

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## **ABSTRACT**

### **A STUDY ON THE GROWTH STRATEGY OF LG AIR CONDITIONER BUSINESS**

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This paper analyzes the current situation of the air conditioner business, focusing on the industry analysis and key success factors of the leading players, and examining the case of the LG Electronics Air Conditioner OBU. The LG Electronics Air Conditioner OBU became the world's second largest maker of air conditioners in 1999 and aims to be number one in 2003. It is meaningful to investigate how LG has achieved a major turnaround in a difficult situation, and analyze the core competence of its growth strategy which has led to its success.

The key findings obtained from this case study are as follows: to be successful in the competitive world market, it is imperative to have product leadership, cost competitiveness and strong leadership, focusing on growth. Preparing for the next era, it is essential to develop the internal competence of the organization through breakthrough product innovation, creative marketing strategy and strategic decision making for the future.

## **ACKNOWLEDGEMENTS**

Many people have given their precious time and generous support to this thesis. First of all, I would like to express my sincere gratitude to my supervisory professor, Dr. Seung-Joo Lee, who has always encouraged me and given me indefatigable advice and comments. Also, I would like to thank the Dean of KDI School, Dr. Gil-Jin Lim, who has given me such great motivation and stimulation for my study at KDI. His tireless enthusiasm and devotion to the development of the Korean economy have inspired me and given me new insight on what I should do for my organization and my country.

I am also grateful to my company, LG Electronics, and the members of the Air Conditioner OBU who have supported my study at the KDI School. I would like to dedicate this thesis to my family and all the people who have helped me complete this thesis.

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## **Chapter I. Introduction**

### **I. Research Objective**

One of the fastest growing products among consumer electronics in Korea is the air conditioner business. The market growth of Korea's air conditioner business in 1995 was 85-88 % and this figure remained stable for three years until just before the IMF crisis.<sup>1)</sup> Before the middle of the 1990s, air conditioners did not get much attention from consumers due to low demand, seasonality, and a high consumer price in comparison to usage. From the manufacturer's point of view, the air conditioner business was viewed as an unattractive and unprofitable business, but top management in Korea did not ignore the growth potential of this product.

The industry evolution trend in developed countries has shown that air conditioners have become the major product followed by color TVs, VCRs and motors. It was also true in Korea; color TVs took off in the early 1980s, VCRs in the middle of the 1980s, and motors from the end of the 1980s to the early 1990s. Since the beginning of the 1990s, some leading firms' management carefully watched the situation of the Korean market. From 1990 to 1995, the cumulative annual growth rate (CAGR) of air conditioners reached 18 % and the penetration ratio rapidly increased to 12-15 %.

Now it is worth studying the successful case of the outstanding air conditioner manufacturer, its strategy, and its top management's decision making procedures. The

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<sup>1)</sup> Annual Report of Consumer Electronics Distribution, Japan 1995

objective of this thesis is to see how the Air Conditioner OBU of LG Electronics, one of the most leading electronic companies, evolved and turned their loss to profit, and to investigate the importance of top management's direction setting, change management and risk management for the growth.

## **II. Organization of the Thesis**

Chapter II analyzes the market situation and trends in the air conditioner industry, and describes the profiles and competence of Korea's major players.

Chapter III is a case study of LG's Air Conditioner OBU (Operational Business Unit). It describes the OBU's brief history, financial performance, growth strategies and global strategies for air conditioner business, and the OBU's future challenges.

Chapter IV examines some of the key issues and survival strategies in a competitive environment, and suggests some strategic recommendations for continuing and fruitful growth.

## **III. Scope & Terminology**

According to ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers), the leading association of the air conditioning industry, HVAC & R denotes Heating, Ventilation, Air Conditioning and Refrigeration. In this thesis, the term air conditioner covers cased assemblies or assemblies designed as a unit to

provide conditioned air within an enclosed space, and does not cover central air conditioning systems or built-in air conditioner systems being equipped together with the construction of buildings or houses.

Three types of air conditioners are herein defined for the reference and study of the air conditioner business.

**Window type A/C:** It is installed through the window or wall as a single package.

**Wall mounted type A/C:** The indoor unit is hung on the wall and the separate outdoor unit is installed outside, and they are connected with a connection pipe.

**Floor standing type A/C:** The indoor unit is installed on the floor and the separate outdoor unit is installed outside in the same manner as the wall mounted type A/C.

## **Chapter II. Industry Analysis of the Air Conditioner Business**

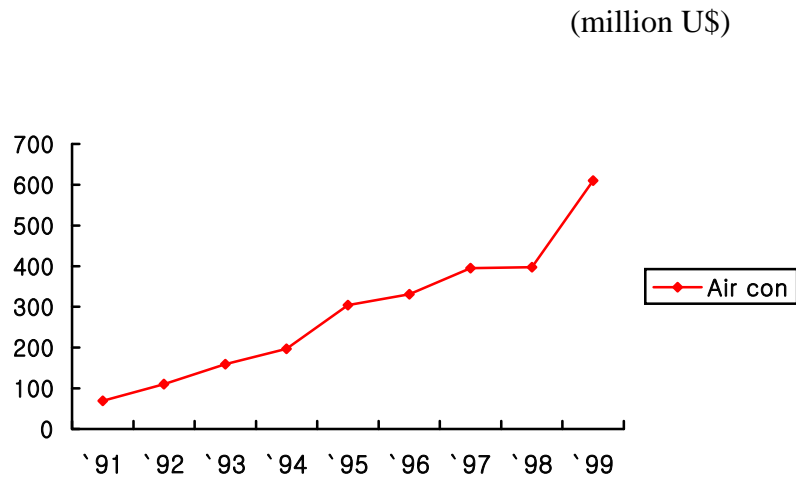
### **I. Air Conditioners: A Mature, but Growing Industry**

#### **1. Industry Analysis**

Compared to the overall declining situation of consumer electronics, the air conditioner business is one of the fastest growing businesses in the electronics industry. Even though the air conditioner was first manufactured in Korea in 1968 (by LG Electronics Inc. with the technical assistance of General Electric, USA), market size did not expand until the early 1990s. The main reasons for its low popularity were its high consumer price and high power consumption due to the low capacity of the power plant. Until recently, the government educated people with information that the electrical power consumption of an air conditioner is higher than that of 20 electrical fans, in order to restrict the use of air conditioners. Another reason for its low popularity was its seasonality; even though a consumer paid much money to buy an air conditioner, the usage period of the product is at best 10-15 days out of the whole year.

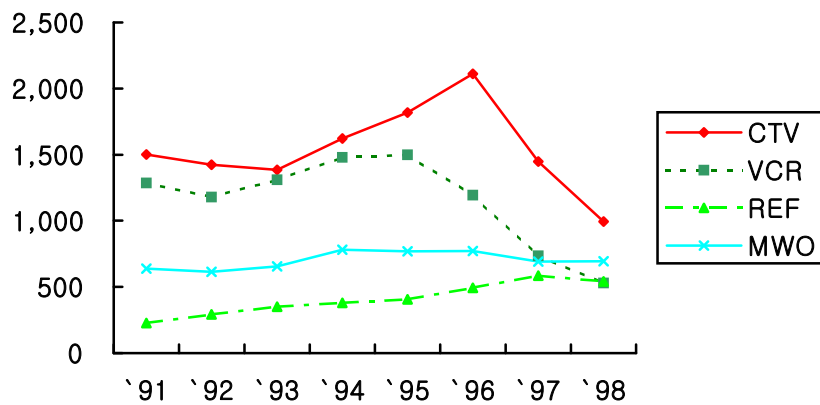
Since the middle of the 1990s, however, demand has exploded due to the rising income of the middle class, improved quality of life, and the aggressive marketing strategies of leading companies. Fig.1 and Fig.2 show the export trends of Korean air conditioners and the other major consumer electronics products based on shipment quantities.

<Fig.1> Export Trends of Korean Air Conditioners



(Source: Electronic Industries Association of Korea, Sept. 10<sup>th</sup>,1999)

<Fig.2> Export Trends of Major Consumer Electronics  
(million US\$)



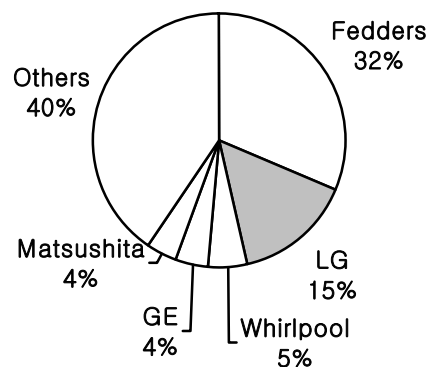
(Source: Electronic Industries Association of Korea, Sept. 10<sup>th</sup>,1999)

## 2. Overseas Market

The most competitive market in the world in the field of window type air conditioners is

the US market. Next to Fedders (USA) and LG Electronics (31.5 % and 15 % market share), American and Japanese manufacturers are competing to be number three in the US market. <sup>2)</sup> Most US manufacturers have shifted their production base to China or South-East Asia, and they are purchasing the air conditioners from these countries or from Korea through OEM (Original Equipment Manufacturer). Japanese manufacturers are specialized and superior in split air conditioning systems, rather than window type air conditioners. Fig. 3 shows the major players' market share in the U.S. as of 1999.

<Fig. 3> The Major Players' Market Share in the U.S. as of 1999.



(Source: Sales Report of LG Electronics 1999)

The largest air conditioner market in the world is Japan whose total market value in 1999 was 5,647 million U\$, 1/3 of the global market value of 15,984 million U\$. The weather in Japan is very hot and humid in summer and very cold in winter. Japanese traditional flooring, called “dadami”, has no heating system beneath it and it is difficult

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<sup>2)</sup> Daily Economic Newspaper Jan, 2000

to install the heating appliance on the *dadami*, so Japanese manufacturers have developed air conditioners which include a heating system (called a heat pump). During the summer, air conditioners are used as cooling systems and dehumidifying appliances, and conversely, are used as heating systems in the winter. Japanese manufacturers have developed customized products for the Japanese people with consideration for the traditional house's cooling and heating system, and it is difficult to find foreign players who are successful in Japan as they lack the accumulated technical know-how in heat pump technology and as the Japanese have strong loyalty to their local brands. The six major players are Matsushita, (whose brand is National), Sanyo, Mitsubishi, Hitachi, Sharp and Toshiba-Carrier (newly formed in 1999).

In the Middle East, even though the weather is hot and the market looks very attractive to multinational companies, the local manufacturers are very strong in terms of production and sales, due to national protectionism and high import tariffs. Due to the nice weather, the demand for air conditioners is very low in Europe except in Italy, Spain and Greece. Now, the emerging markets are in Russia, Central Asia and Africa.<sup>3)</sup>

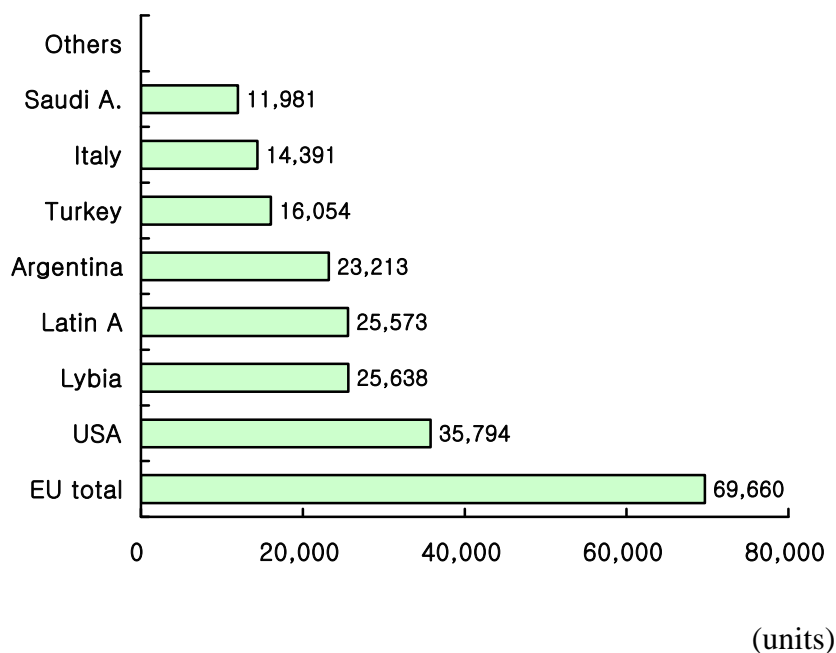
Fig. 4 shows the major export countries of Korean air conditioners.

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<sup>3)</sup> Annual Report of Electronics Industry, 1999



<Fig. 4> The Major Export Countries of Korean Air Conditioners.



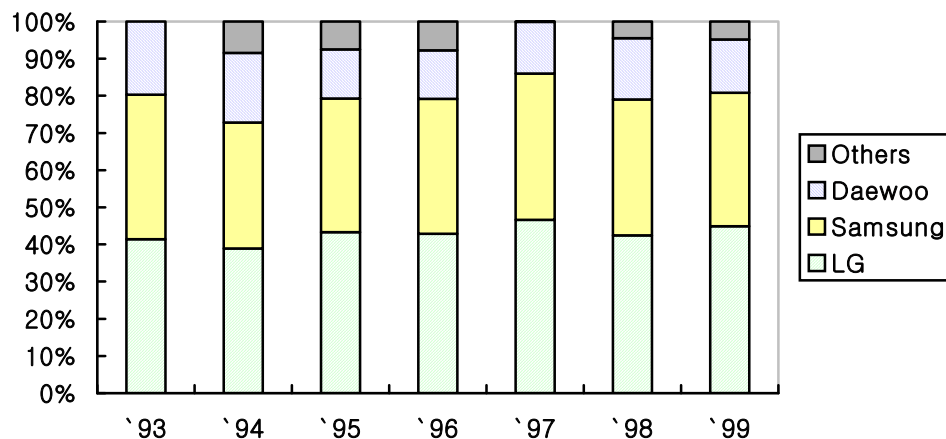
(Source: Electronic Industries Association of Korea, as of 1997)

### 3. Korean Market

For the last 7-8 years, the CAGR of domestic air conditioners was higher than 20 % except for 1998-1999. The major manufacturers were spurred to export, especially during the period of the IMF Program, to overcome the depressed domestic economy. The four major players have been LG Electronics Inc., Samsung Electronics Co.Ltd., Mando Mechanical Co. and Daewoo-Carrier Corp., however, the air conditioner business has been seriously affected by the Korean financial crisis for the last two years. Mando, which had been ranked third, went bankrupt last year and its mother company, Halla Group, decided to spin off the air conditioner division from the Mando Mechanical Co. Daewoo-Carrier, ranked fourth, announced to separate by 2000, and Daewoo announced to merge with the air conditioner division of Doowon Refrigeration Co. just before Daewoo went bankrupt.

Doowon Refrigeration Co. and Century Co. are suffering from financial difficulties and Bumyang, one of the oldest and strongest in the area of middle and large sized air conditioner manufacturing, went bankrupt last year. When the air conditioner business suddenly emerged as a prominent and profitable business in the middle of 1990s, many medium sized companies such as Anam Electrical Co., Tongyang Magic Co. and Lotte Mechanical & Engineering Co. investigated starting business in 1997, but gave up their investment plans due to the financial crisis. The market share trends for the last seven years are shown in Fig. 5. The leading players with respect to market share in 1999 were LG (44.9 %), Samsung (35.9 %) and Daewoo-Carrier (14.4 %), based on room air conditioners (window type and split type air conditioners).<sup>4)</sup>

<Fig. 5> Market Share in Korea, 1993 to 1999 (%)



(Source: Data Base from Financial Supervisory Service, 1999)

<sup>4)</sup> Sales Analysis of LG Electronics, 1999

## II. Major Players of the Korean Air Conditioner Industry

### 1. LG Electronics Inc.

LG Electronics Inc., the pioneer of the Korean electronics industry, started its business in 1958 under the name of GoldStar. LG has four major business divisions: the Display, Home Appliance, Multi Media and TFT-LCD divisions. Within each division (Note: a division performs a similar function and has similar characteristics to an SBU (Strategic Business Unit)), there are several OBUs (Operational Business Units) which directly handle the sales, manufacturing, finances and overall management of the products. Table 1 illustrates the four divisions, OBUs, and sales amounts for 1998-1999.

During 1996-1999, the total export amount of the Home Appliance Division more than doubled, due to the rapid growth of air conditioners and the Korean Won's depreciation

<Table 1> Sales Record of LG's Four Major Divisions as of 1998-1999

(billion Won, %)

DIVISION	OBU	SALES IN '98 (%)	SALES IN '99 (%)
Display	TV, CPT, Monitor, MEG, DY/FBT etc.	3,815 (38.7 %)	4,205 (39.9 %)
Home Appliance	Refrigerator, Washing Machine, Air Conditioner, MWO, V/Cleaner	2,677 (27.2 %)	3,032 (28.7 %)
Multi Media	VCR, PC, Computer, OA, CD-ROM, Audio etc.	2,253 (22.9 %)	2,953 (28 %)
TFT-LCD	LCD etc.	1,108 (11.2 %)	0.356 (3.4 %) <sup>5)</sup>

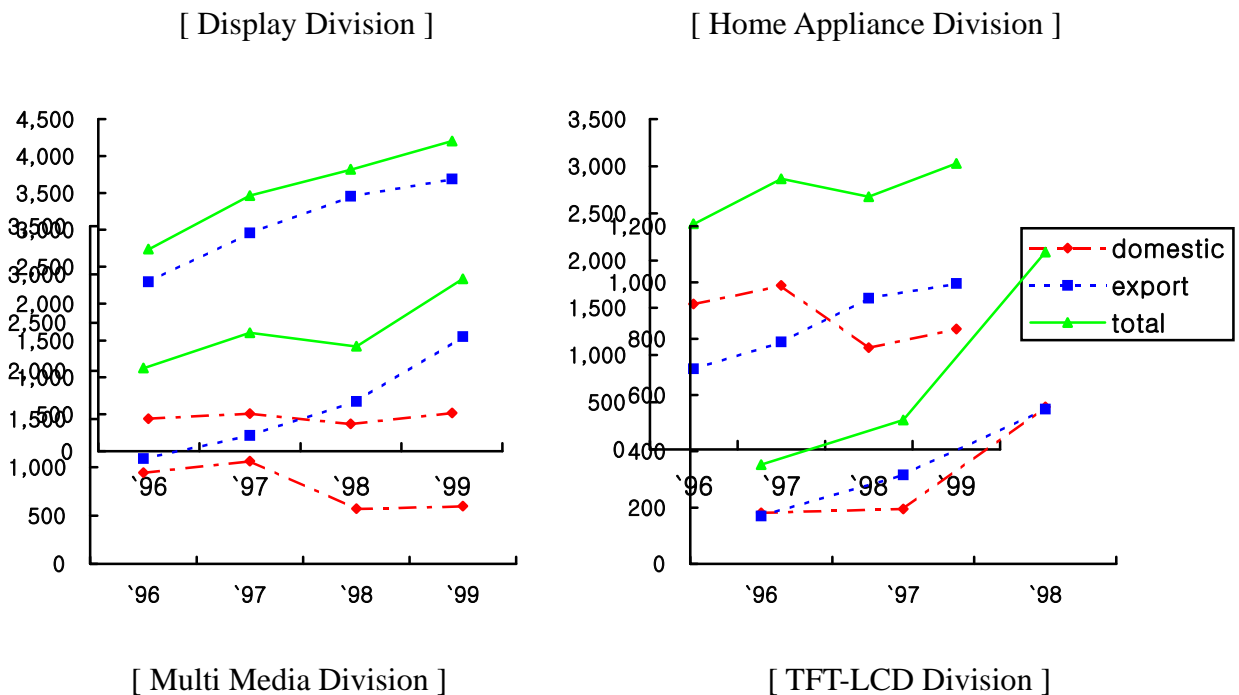
<sup>5)</sup> TFT-LCD was spun off in 1999 and this figure shows service parts sales.

Total		9,853 (100.0 %)	10,546 (100.0 %)
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(Source: 1999 Annual Report of LG Electronics, Jan 2000)

caused by the IMF crisis. Also the total sales of the LCD Division nearly tripled over the last three years. This division was spun-off last year and a new joint venture company was established with a Netherland electronics firm: LG-Phillips Co.Ltd. Fig. 6 shows the sales trends (domestic/export/total) of each of the four divisions for four years.

<Fig. 6> Sales Trends (Domestic/Export/Total) of Four Divisions (billion Won)



(Source: 1999 Annual report of LG Electronics, Jan 2000)

The top seven items of LG are the monitor, TV, CPT, air conditioner, refrigerator, CD-ROM and LCD. Table 2 shows the sales (domestic/export) of the top seven products based on production quantity and sales amount for the last three years.

<Table 2> Sales of Top Seven Products at LG

(thousand units, billion Won)

PRODUCTS		1996		1997		1998	
		Quantity	Amount	Quantity	Amount	Quantity	Amount
Monitor	Domestic	268	37	319	77	306	88
	Export	3,028	725	4,925	1,030	6,633	1,355
	Total	3,296	763	5,244	1,107	6,939	1,443
TV	Domestic	940	354	903	351	511	169
	Export	6,916	802	7,068	961	5,419	856
	Total	7,856	1,157	7,971	1,312	5,930	1,025
CPT	Domestic	401	34	623	51	292	30
	Export	7,075	535	6,582	665	8,727	941
	Total	7,476	569	7,205	716	9,019	971
Air Con	Domestic	501	403	541	481	279	229
	Export	717	189	760	266	1,063	413
	Total	1,218	593	1,301	746	1,342	642
Refrige- rator	Domestic	760	327	841	392	418	182
	Export	946	154	1,109	259	1,217	329
	Total	1,706	481	1,950	651	1,635	511
CD- ROM	Domestic	759	57	883	63	790	57
	Export	2,670	161	5,573	409	9,989	552
	Total	3,429	218	6,456	472	10,779	609

LCD	Domestic	5	7	20	24	11	72
	Export	121	110	247	273	405	461
	Total	126	117	267	297	416	533

(Source: 1998 Annual Report of LG Electronics, Jan 1999)

Unlike end-products such as the TV, air conditioner and refrigerator, the export of components such as the monitor, CPT, CD-ROM and LCD were not affected by the IMF crisis, as their main markets were primarily overseas countries, and they were beneficiaries of the Korean Won's depreciation during the financial crisis. Even though the Korean market was threatened by the economic recession, LG has tried to create new demand and to develop a niche market through high value added and multi media products. Preparing for the digital era of the 21<sup>st</sup> century, the company has changed its slogan to "Digital ez LG" and has decided to develop all products designed by digital technology. The president & CEO of LG Electronics, Mr. Ja-Hong Koo (John Koo), announced that moving forward, LGE is making great strides towards realizing its vision of becoming the "Best Global Company" in the 21st century. As LGE pursues this vision, it is planning to build "Digital LG" as its premier brand and is making careful preparations to be at the cutting-edge of the electronics industry in the new millennium.

The air conditioner business, which achieved outstanding sales and profits in the last five years, has become one of the most promising businesses in LG Electronics. In terms of sales and profits, the Air Conditioner OBU became the leading OBU within the Home Appliance Division; the total production amount of the Air Conditioner OBU

recorded 657 billion Won in 1998 (734 billion Won and 549 billion Won in 1997 and 1996) followed by the Refrigerator OBU (556, 653 and 499 billion Won in 1998, 1997 and 1996 respectively), Microwave Oven OBU (355, 284 and 271 billion Won at the same period) and Washing Machine OBU (299, 373 and 314 billion Won at the same period).<sup>6)</sup>

One of key success factors of the LG air conditioner business was an aggressive marketing strategy in the domestic market and a growth strategy based on PMS (Product Market Strategy), created in consultation with Mckinsey & Company, in the overseas market. In addition, the OBU developed new and advanced technologies every year, which were suitable for air conditioners, such as Neuro-Fuzzy, Biology and Chaos theory, and the OBU combined these advanced technologies with the air conditioners.

The Air Conditioner OBU's first management priority was "Quality". In order to prevent the shipment of any defected products, they strengthened and empowered the responsibility and authority of the independent Quality Control department. All employees can see this slogan and motto at every corner, wall and column, and even in the bathrooms: "To catch a worm in my house, I would burn down my house", an old Korean saying that shows the will that they would destroy all the products in the warehouse if they found a defected product during production so as not to lose the credibility of the LG brand in the eyes of the customer.

## **2. Samsung Electronics Co.Ltd**

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<sup>6)</sup> The actual sales record in Table 3 and production amounts are not identical

Even though Samsung started its business in 1968, ten years later than LG, they caught up to LG in the middle of the 1980s with an aggressive marketing strategy and massive investment in semiconductor and C&C (Computer & Communication) products. Recently, Samsung was the only Korean firm selected as one of the one-hundred firms representative in S&P's (Standard & Poors) global stock index (one-hundred firms were intensively investigated by S&P; one firm in Korea, twelve firms in Japan and thirty nine firms in the USA etc.).

Samsung has three major business divisions: the Semiconductor & Telecommunication, Computer & Display, and Household Appliance divisions. In the Semiconductor Division, Samsung is proud of keeping a global leadership position with respect to the 256 MDRAM and being the pioneer in the development of the 1 GDRAM and mass production of the 128 MDRAM. The global market share of TFT-LCD became number one in the world, and Samsung started to export the 30" LCD whose price is higher than US\$ 30,000. Intel invested 100 million dollars last year to jointly develop the  $\alpha$ -CPU in system LSI sector, and Samsung aims to be the best semiconductor company in the 21<sup>st</sup> century. They are also focusing on technology to develop the smallest and lightest cellular phone and high functional folder, and are trying to export GSM and GMPCS equipment to keep their leading position in the field of satellite communication systems.

In the Computer & Display Division, Samsung is also preparing for the digital era, and reallocating their resources to develop digital TV, DVDP, DVC, DSC and DVD-ROM. Samsung recorded remarkable achievement in the sales of PCs, Monitors, HDDs, CD-ROMs and Printers. Compared to other products, home appliances in the Household



Appliance Division have had relatively low priority in the overall management. To countermeasure the Korean market's bipolar trend, Samsung strategically differentiated their brand: SAMSUNG as a low involvement brand, ZIPEL in refrigerators and PAVV in color TVs as high involvement brands. Table 3 illustrates the three Divisions' major products and sales in 1998-1999.

<Table 3> Sales Record of Samsung's Three Major Division as of 1998-1999.

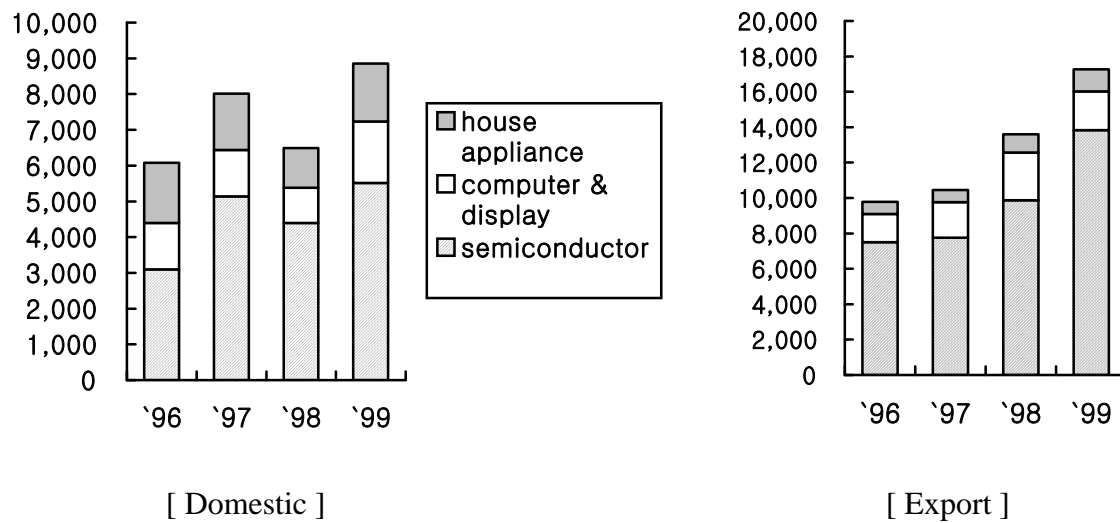
(billion Won, %)

DIVISION	OBU	SALES IN '98 (%)	SALES IN '99 (%)
Semiconductor & Telecommunication	DRAM, SRAM, Micom, CDMA, HHP, C/TV, VCR etc.	14,265 (71.0 %)	19,348 (74.1 %)
Computer & Communication	PC, HDD, Monitor etc.	3,689 (18.4 %)	3,901 (14.9 %)
Home Appliance	Refrigerator, Microwave Oven, Washing Machine, Air Conditioner	2,130 (10.6 %)	2,869 (11 %)
Total		20,084 (100.0 %)	26,118 (100.0 %)

(Source: 1999 Annual Report of Samsung Electronics Co.Ltd., Jan 2000)

As figure 7 shows, the sales mix of household appliances, including the air conditioner, out of total sales has shown no increase in the domestic and export markets for the last four years. Samsung mainly concentrated its resources and core competencies on the semiconductor and telecommunication business.

<Fig. 7> Sales Mix of the Three Divisions (billion Won)



(Source: 1999 Annual Report of Samsung Electronics Co.Ltd., Jan 2000)

The top nine items of Samsung are semiconductors, mobile phone equipment, color monitors, HDDs, color TVs, PCs, microwave ovens, refrigerators and air conditioners in terms of sales amounts. Table 4 illustrates the sales (domestic/export) of these top nine products based on production quantity and sales amounts for the last three years.

<Table 4> Sales of Top Nine Products at Samsung <sup>7)</sup>

(thousand units, billion Won)

PRODUCTS		1996		1997		1998	
		Quantity	Amount	Quantity	Amount	Quantity	Amount
Semi-	Domestic		247		210		264

<sup>7)</sup> No actual data on air conditioner in 1999 annual report. This figures come from 1998 annual report.

conductor	Export		5,040		5,428		6,830
	Total		5,287		5,637		7,094
Mobile Phone	Domestic	906	354	5,042	1,951	6,192	2,287
	Export	219	802	2,420	346	4,212	828
	Total	1,125	1,157	7,462	2,297	10,404	3,115
Monitor	Domestic	1,112	329	1,095	314	860	245
	Export	6,949	1,411	4,233	1,224	4,050	1,180
	Total	8,061	1,740	5,328	1,538	4,910	1,425
HDD	Domestic	508	76	631	100	931	150
	Export	861	116	4,114	521	7,341	1,02
	Total	1,369	192	4,745	620	8,272	1,353
Color TV	Domestic	1,437	486	1,293	447	2,249	267
	Export	7,716	1,329	5,590	783	847	678
	Total	9,153	1,815	6,886	1,230	3,096	945
PC	Domestic	578	796	675	795	449	584
	Export	65	43	80	74	74	90
	Total	643	839	755	869	523	674
Micro-wave Oven	Domestic	954	298	808	250	565	160
	Export	2,582	336	2,221	314	2,862	474
	Total	3,536	638	3,029	564	3,427	634
Refrigerator	Domestic	857	386	754	366	525	252
	Export	620	118	371	124	377	158
	Total	1,477	504	1,125	490	902	410

Air Con	Domestic	623	391	693	451	393	224
	Export	259	80	291	89	339	153
	Total	882	471	984	540	732	377

(Source: 1998 Annual Report of Samsung Electronics Co.Ltd., Jan 1999)

In the air conditioner business, when the Korean industry leader LG declared that they had increased their production capacity to 3.5 million units from 3 million units, and that they ranked in the world's top two, with a global market share of 8.8 % in 1999, Samsung made a plan to invest 10 million dollars in air conditioner business by the year 2000, and to develop the air conditioner as a strategic export product in Samsung. At the same time they made a plan to increase their sales to 1 trillion Won with a 2.3 million production capacity and a 6 % global market share. So far, Samsung has focused the air conditioner business on the domestic market rather than the export market, and in order to be the world's top maker, top management has realized that they should shift the export ratio to 80 % by exporting 1.6 million units in the year 2000.

Strategic sales alliances with General Electric and technical alliances with Toshiba and Daikin are to be considered for the development of the new products.

### **3. Mando Mechanical Co.Ltd**

Mando started its business with car components such as brakes, steering and electrical parts, buffer mechanics, car-radiators and car air conditioners in 1968. Table 5 shows Mando products' Korean market shares in 1998.

<Table 5> Mando Products' Korean Market Shares in 1998 <sup>8)</sup>

(%)

	BRAKES	STEERING	BUFFER	ELECTRICAL	CAR A/C
Market Share	<b>46</b>	<b>45</b>	<b>52</b>	<b>59</b>	<b>40</b>

(Source: 1998 Annual Report of Mando Mechanical Co.Ltd, Jan 1999)

In 1986, Mando established a joint venture company, Halla Climate Control Corp., with Ford for the manufacturing of car air conditioners. To maximize its accumulated core competence in car air conditioner technology, they began developing large-sized household air conditioners in 1990. In 1994, Mando established Winia Division and launched Winia room air conditioners to penetrate the small and medium sized air conditioner markets with aggressive sales strategies and high quality products.

Mando, a late comer in the air conditioner business, caught up with Daewoo-Carrier and ranked third in the middle of the 1990s. Mando was awarded the “Marketing Frontier Prize” in 1996, and the Winia air conditioner was selected as the Customers’ Best Satisfactory Product among Korean air conditioners by the Korea Management Association in 1997 and 1998. Also in 1998, the Winia air conditioner was awarded as This Year’s Best Hit Product by the Korea Management Association.

Another hit product of Mando was “Dim-chae” (the Kimchi Refrigerator) which was developed through air conditioner technology. Winia Dim-chae was also selected as a 1997 Best Hit Product by the Korea Management Association and awarded the IR52

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<sup>8)</sup> Due to the bankruptcy, 1999 annual report is not available.

Jang Young-Sil's high technology prize, <sup>9)</sup> by the Korea Industrial Technology Association in 1998. However, due to its explosive popularity among housewives, many new players such as Samsung, LG and Chung-Ho Nice started to make and sell Kimchi refrigerators, stimulated by Mando. Table 6 shows the trend of Mando's market share for the air conditioners and Kimchi refrigerators (Dim-chae).

<Table 6> Mando's Market Share for the Air Conditioner and Kimchi Refrigerator

(%)

	1995	1996	1997	1998
Air Conditioner	<b>10.3</b>	<b>11.1</b>	<b>12.4</b>	<b>6.4</b>
Kimchi Refrigerator	<b>100</b>	<b>71.4</b>	<b>92.5</b>	<b>67.0</b>

(Source: 1998 Annual Report of Mando Mechanical Co.Ltd., Jan 1999)

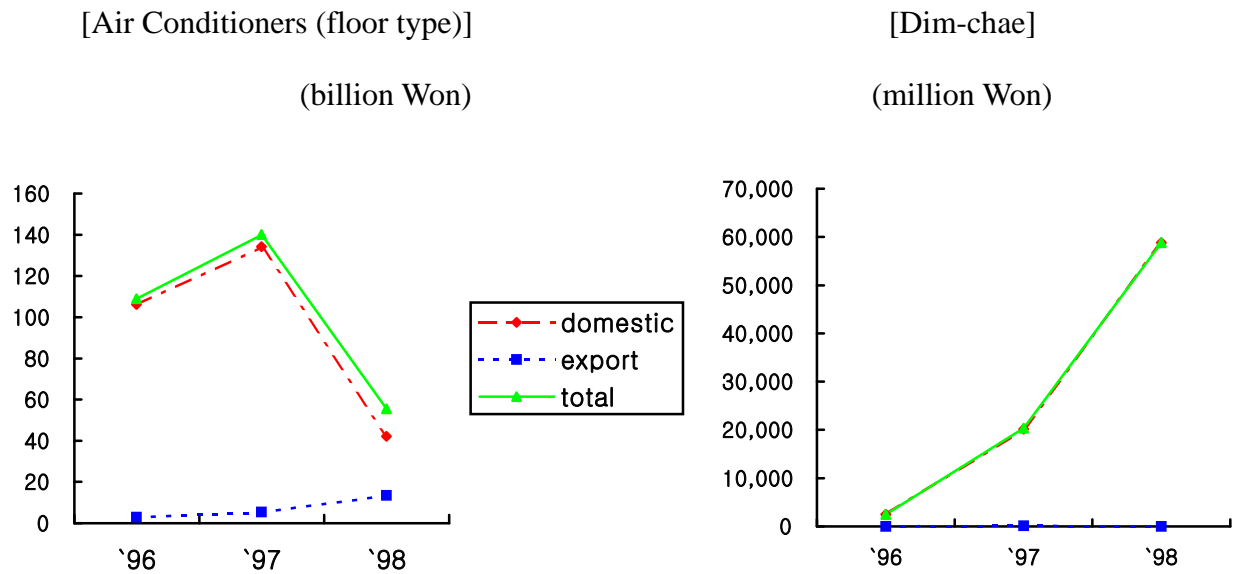
In the air conditioner business, Mando targeted middle class housewives in their thirties and forties who live in large cities and was somewhat successful. Their sales, however, were too biased towards the domestic market rather than the overseas market (96.5 % and 3.5 % in the domestic and export markets respectively), thus during the IMF period, they suffered from sales and financial difficulties as housewives became more sensitive during the economic recession. As soon as the IMF program was introduced, the mother company, Halla Group, went bankrupt and then Mando went bankrupt on the same day of December 6<sup>th</sup> in 1997. However, customers did not turn away from Mando due to high quality and customer satisfaction through WOM (Word of Mouth) especially with

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<sup>9)</sup> honorable prize to celebrate the achievements of Jang Young-Sil who was the most famous scientist in Chosun Dynasty who invented rainfall gauge (pluviometer) and water watch.

respect to the Dimchae, and Mando is now trying to regain their position in the air conditioner business.

<Fig. 8> Sales Trends (domestic/export/total) of Air Conditioners of Mando



(Source: 1998 Annual Report of Mando Mechanical Co.Ltd., Jan 1999)

#### 4. Daewoo Electronics Co. & Others

If Daewoo-Carrier Corp. separates in 2000, Daewoo Electronics Co. would like to make the air conditioner business an independent organization by merging with the air conditioner division of Doowon Refrigerator Co.. Whereas Daewoo-Carrier has accumulated technical know-how and production experiences, Daewoo has no related engineering background, as Daewoo Electronics has only distributed and sold air conditioners while Daewoo-Carrier has manufactured them. However, it is very difficult to forecast the future of Daewoo's air conditioner business due to the bankruptcy of the Daewoo Group.

### **Chapter III. Case Study of LG Air Conditioner OBU**

#### **I. Considering the Future of Consumer Electronics**

##### **1. Top Management's Direction-Setting**

At the end of December 1999, Mr. John Koo, President and CEO of LG Electronics Inc., was considering and planning the future of the company in the 21<sup>st</sup> century. Internally, he has successfully finalized business restructuring, including the 'big deals' under the IMF Program, and recorded the most remarkable turnover and profits since the establishment of the company: 10,546 trillion Won in sales and 2,588 billion Won in ordinary income.<sup>10)</sup> (See Exhibit.1 for the Financial highlights of LG Electronics). Externally, he is confronting new challenges from new businesses such as e-commerce and Internet, along with foreign imported products under the WTO system. So far, he has used the risks as a basis for new chances and now he is eager to combat these challenges with new business opportunities.

In the middle of the 1990s, he classified all businesses into the following categories: Core, Cash-Cow, Challenging, Selective, and Withdrawal Business. The Air Conditioner was classified as Core business together with CRT and Light-Storage business. The VCR, refrigerator and washing machine were classified as Cash-Cow business; digital TV as Challenging business; and HPC and notebook PC as Selective business. As the 21<sup>st</sup> century began, he felt he should modify the company's philosophy in accordance with the advent of the digital era. To be successful in the digital competition, he thought that the products should be competitive in technology and have cost advantages in the

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<sup>10)</sup> Special profit from the equity sales of LG Semiconductor included.



U.S., the most competitive market in the world. Thus he combined all digital business units in the U.S., such as the Zenith project and all the current sales branches, and decided to dispatch the CTO (Chief Technology Officer), Mr. Woo-Hyun Pack, as president of the new organization to maximize and synergize the effectiveness of human resources and technology in the U.S.

Mr. John Koo also decided to change the names of the business divisions to begin with 'digital' to encourage a mindset towards digital products: the Display, Multi Media and Home Appliance divisions were to be changed to 'Digital Display Company', 'Digital Multi Media Company' and 'Digital Home Appliance Company'. Additionally, he ordered all presidents of the divisions (companies) to re-design and develop all the current electronic products to combine digital technology.

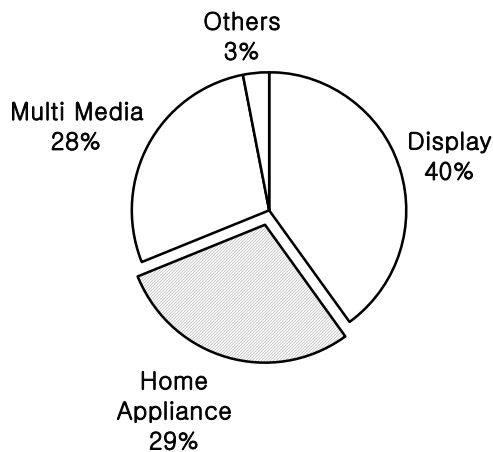
## **2. New Challenges in Electrical Products**

At the same time, Mr. Ssang-Soo Kim, president of the Home Appliance Division, and Mr. Ju-Ik Song, president of the Air Conditioner OBU (hereinafter A/C OBU), had a serious meeting in the Changwon industrial complex to discuss how to develop the electric-mechanical products into digital technology, as their businesses were mainly concentrated on electrical and mechanical engineering based household appliances such as the refrigerator, washing machine, air conditioners, and others. Even though these products were traditionally cash cow business, the trend of technology in these areas did not change or develop as rapidly as in the color TV, computer and Internet businesses.

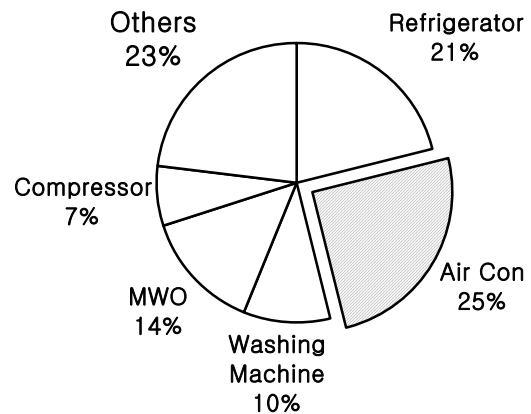
The A/C OBU, the biggest OBU in terms of sales within the Home Appliance Division,

contributed to the division's overall turnover and profit last year as it had for the last five years. Fig. 9 shows the sales mix of the Home Appliance Division in LG and Fig. 10 shows the sales mix of air conditioners in the Home Appliance Division.

<Fig. 9> Sales Mix of Home Appliance Division in LG (%)



<Fig. 10> Sales Mix of A/C in H/A Division (%)



(Source: 1999 Annual Report of LG Electronics, Jan 2000)

The CPT, CD-ROM and air conditioner were chosen as the Top 3 Items in LG Electronics Inc. in 1996, and the company decided to give full institutional and financial support to these three OBUs, and to reallocate all resources to make these three products globally competitive and to achieve rank as one of the world's top 3 in terms of market share. The A/C OBU achieved the world's second largest market share last year, in 1999 (one year earlier than planned), and recorded US\$ 400 million in export. The A/C OBU exported US\$ 100 million in 1994, US\$ 200 million in 1995, US\$ 300 million in 1998 and

U\$ 400 million in 1999. This year, in 2000, they are preparing a ceremony to celebrate an export of U\$ 600 million. Mr. SS Kim and Mr. JI Song have been discussing how to develop the air conditioner with digital technology and where to reallocate their human resources in order to become number one globally by the year 2005.

## **II. The Air Conditioner Business**

### **1. Product Positioning**

In 1968, the room air conditioner was manufactured first in Korea by Goldstar Co.,Ltd. (the old name of LG Electronics) with the technical assistance of General Electric. Until the 1980s, the air conditioner was considered to be an extravagant household appliance and its penetration ratio reached only 8~9 %. Since the 1990s, however, increased individual household income and an explosive demand for cars 'equipped with car air conditioner' have made the air conditioner industry step into the growth stage. Fig.1 in Chapter I shows the export trends of Korean air conditioners over the last ten years and illustrates the growth of Korean air conditioner makers.

During 1989 – 1991, the demand for air conditioners sharply increased, and then hit the bottom in 1992-1993 due to the abnormal weather (a cool summer). From 1994, however, additional abnormal weather (extremely hot summers) made the demand for air conditioners hit the roof, and demand continued to increase until 1997, just before the IMF crisis.

To see the effect of explosive demand on the air conditioner, it is helpful to see the growth rate of 1994-1995. Compared to 1994 in terms of sales quantity, there was an

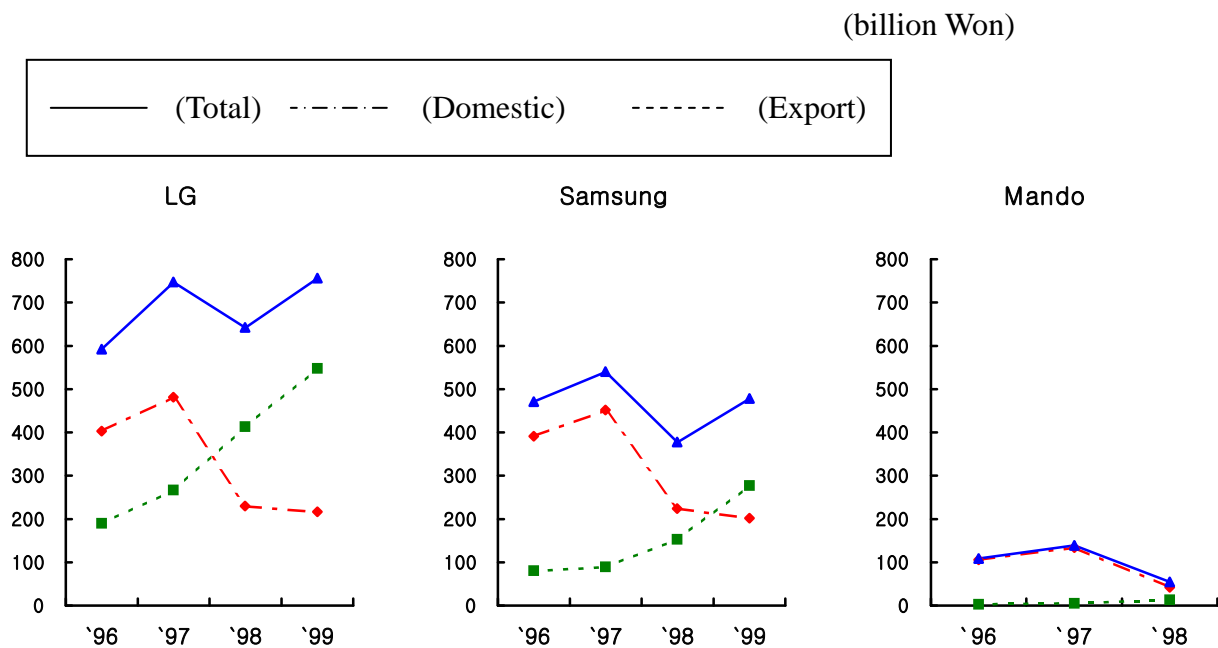
85 % increase in household room air conditioners in 1995 (959 thousand units to 1,771 thousands units, and 310 billion Won to 549 billion Won in sales amount), in particular, wall mounted split air conditioners, which are very popular in small and medium sized apartments and stores, increased their sales quantity by 234 % in 1995 (350 thousands units to 1,164 thousands units). Commercial floor standing air conditioners which are popular in restaurants, offices and large sized apartments increased their sales quantity by 88 % in 1995 (336 thousand units to 631 thousand units and it was 560 billion Won in sales amount).

In 1995, the total market size of the air conditioner was 1.1 trillion Won and it was the second largest size in the Korean electronics industry, higher than that of the refrigerator (900 billion Won) and washing machine (700 billion Won). Eventually, in 1997, its market size became the largest one, 1.7 trillion Won, higher than that of the color TV. In the past, the 'Big 5' items which were representative in the electronics companies, when evaluating and comparing the sales situations, were the color TV, VCR, refrigerator, microwave oven and washing machine, but nowadays, the 'Big 5' items have changed to the color TV, refrigerator, microwave oven, washing machine and 'air conditioner' (replacing the VCR). As other major home appliances' penetration ratios were already saturated; 137 % for the color TV, 105 % for the refrigerator and 96 % for the washing machine in 1995, most of the electronics companies had difficulties in finding new demand and niche markets as the penetration ratio for the air conditioner was below 15 %.

LG has led the Korean air conditioner industry in manufacturing and sales, especially in

the export market. Fig. 11 and Table 7 show the sales amounts in the domestic and export markets for the last three years.

<Fig. 11> Sales Amounts in Domestic and Export Markets of 'Big 3' Players



<Table 7> Sales Amounts in Domestic and Export Markets of 'Big 3' Players

(billion Won)

	LG			SAMSUNG			MANDO		
(Year)	'96	'97	'98	'96	'97	'98	'96	'97	'98
Domestic	403	481	229	391	451	224	106	134	42
Export	189	266	413	80	89	153	3	5	13
Total	592	747	642	471	540	377	109	139	55

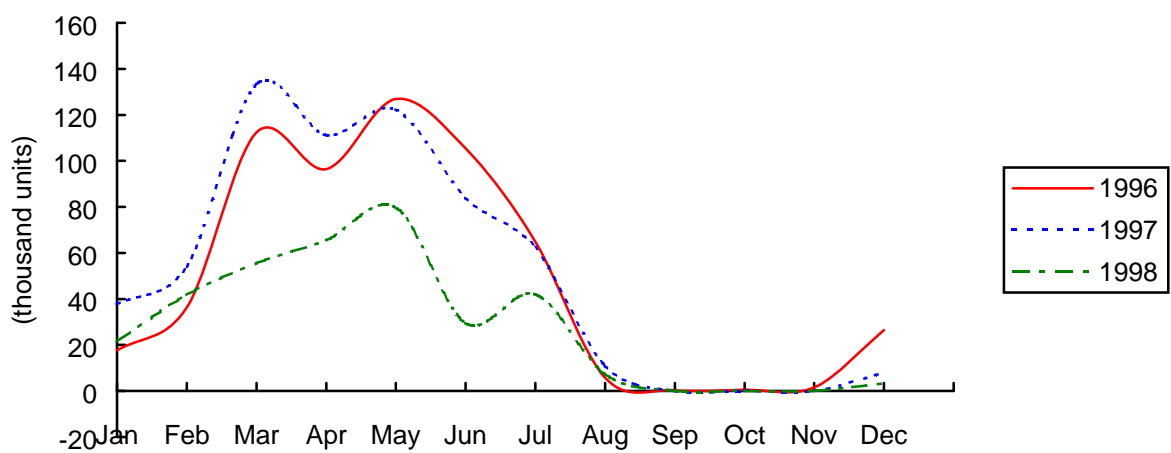
(Source: 1998 Annual Report of each company submitted to FSS <sup>11)</sup> )

<sup>11)</sup> Financial Supervisory Service

## 2. Production

The most important production-related factor was the dramatic seasonality of sales. The usage and operation of the air conditioner was heavily concentrated in the summer season. This irregular sales pattern created large fluctuations in production capacity utilization. Fig. 12 shows the seasonal demand pattern for three years.

<Fig. 12> The Seasonal Domestic Demand Pattern for three years



(Source: Sales Trend Analysis of LG Electronics, 1999)

While other competitors experienced large fluctuations and were suffering from excess capacity due to the short-summer, LG aggressively sought to solve these difficulties. First, they increased exports to Southern countries such as South America, Australia and Africa as the seasons of the Southern and Northern areas are opposite during the year (for instance, if it is winter in Korea, it's summer in Australia). By doing so, they could allocate the production schedule uniformly over the year and reduce the fluctuations of production utilities. Second, they adjusted the production plan adequately so that the assembly line could produce air conditioners in the summer, and then shift to produce

heating appliances in the winter, by implementing FMS (Flexible Manufacturing System). Finally, under intensive market survey, they started a ‘precedent-reservation and precedent-production program’.

### **3. Marketing**

To overcome the disadvantages of seasonality, LG changed the traditional concept of air conditioners from “the air conditioner is a useful product in hot weather” to “it’s a four seasons product”, by developing new air conditioners equipped with air cleaners, and by advertising these functions as useful for the whole year since they purify polluted indoor air and remove smoke, ticks and bacteria.

Another innovative idea that shifted the paradigm was that of making special advertisements of the air conditioners on TV and in newspapers aggressively in the ‘cold’ winter, providing huge discounts and advantages such as free-installation and a lottery for a free overseas package trip. It was regarded as a crazy idea at first to advertise air conditioners in the cold of winter, but it became one of the most successful marketing strategies in the electronic industry, as the orders for air conditioners are concentrated in summer, and naturally the installation should be done during the short summer, normally June to August. During that time, due to the lack of skillful installation technicians, the installation fee is very expensive, thus if the installations are made in winter, the fee is relatively cheaper than summer, and LG intended willingly to pay for the ‘cheaper’ fee to reduce the customer’s burden. The response from the customer was explosive and it was so successful that other competitors started the pre-reservation program actively.

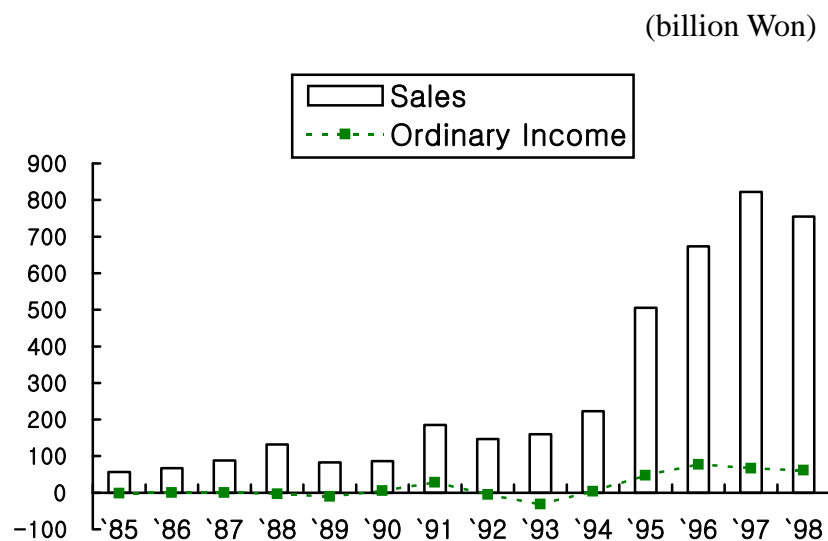
### III. How the Air Conditioner OBU Evolved

#### 1. OBU's Crisis

##### 1-1. Financial Difficulties

Over the five years, from 1985 to 1990, the A/C OBU staff must have prepared for the inauguration ceremony of a new president of the OBU every eight to nine months as the OBU president, as well as the plant manager, were changed eight times in five years. The six years' financial results (Fig. 13) show why the CEO fired or changed the president of the A/C OBU so often. Finally Mr. SH Kim, the former executive director of domestic sales of air conditioners, was appointed as the new President and Executive Director of the A/C OBU in January 1991, and the CEO gave a final mission to him to revitalize the air conditioner business within three years.

<Fig. 13> Financial Performance of LG A/C OBU



(Source: Annual Report of LG Electronics)



Upon packing his stuff to move to the A/C OBU, located in Changwon City, Mr. SH Kim thought that if he should fail to revive the air conditioner business, the CEO might consider not to continue the air conditioner business any more and withdraw the whole business. On the way to Changwon City, he thought over and over about how to revitalize the business and reinvent the whole organization for the future of the A/C OBU.

## **1-2. Organizational Problems**

In August 1987, for the first time in its 30 year history, and again in 1989, LG experienced violent labor strikes in the Changwon Industrial Complex. The strikes' origins at that time were mainly Changwon and Ulsan City, and were concentrated on heavy and mechanical industry. After the strike, the factory workers did not listen to the management's voice and the office workers felt some psychological barriers towards the factory workers.

Until then, the LG Group's top management and employees were proud of their harmonization and the cooperation between the employers and employees as well as between the organization members, but the serious labor strikes made top management consider the re-establishment of the basic philosophy of the Group. In February 1990, they changed the management philosophy of the Group to "Creating Value for the Customers" and "Management for the Human Dignity" instead of "Harmonization & Cooperation, Frontier Spirit and R&D".

### **1-3. Depressed Morale of the A/C People**

Mr. SH Kim looked at the brief history of the A/C OBU and saw the highlighted technology, production capability and accumulated know-how transferred from top-tier companies like General Electric and Matsushita and so forth. Once he stepped into the assembly line and warehouse for components and finished goods, however, he found that things were not so clean and were not optimally arranged for efficient production and logistics.

The overall atmosphere of the employees was depressed and many of the engineers and white collars, and even young freshmen, of the A/C OBU were frustrated and discouraged due to the financial difficulties, even though these employees had devoted themselves to the development, sales and quality control more than in any other OBU. He suddenly realized that there was something he should do before he could focus on financial goals or on product innovation.

## **2. The Value Game in Mr. Kim's Era**

### **2-1. Crisis Management**

#### **Charismatic Leadership**

As soon as Mr. SH Kim came to the office in January 1991, he called all the general managers in the A/C OBU and ordered them to make a 1991 annual action plan for each department. He added some comments that the presentations would be made at 5:00 a.m every morning until he and every member could agree on the action plan in detail, and

that all members including female secretaries and typists should be on time. It was called the “Dawn Consensus Meeting”. He had the intention to enlighten all the employees’ habitual and conventional manners with a kind of shock therapy, by approaching things with a totally different way than before. At 5:00 o’clock, he entered the presentation room and then ‘locked’ the door and did not allow any members to join the meeting who were late for the appointed time. He never allowed any reasons for why somebody was late for the meeting, and tried not to see him or her anymore. He wanted to share all pains and compensations with the others and make them understand the current difficult situation of the A/C OBU.

He spoke in retrospect of the dawn consensus meeting later:

“ Of course, I was more tired and difficult than anybody else because I had to do these meetings every day whereas other members did their own presentation on their day. But, I had to make consensus with all department members and share the information with the others by discussing the strategic decisions of that year all together. There were two reasons why I started the meetings so early. First, I wanted to share our OBU’s sense of emergency being confronted by all OBU members, from part-timers and assembly workers to general managers, by starting at such a ‘non-sense time’. Second, I had to be frugal with time; I wanted to reduce sleeping hours and we could not spend important time by discussing some issues. Everyone should do some valuable and creative work in his or her working hours.”

Mr. SH Kim was described by his subordinates as a “too cautious person” who required people to review things in detail and report anything substantial prior to making any decision. Once a manager reported something to him, he asked and confirmed until he found out the business motivation, risk factors and environmental analysis in detail as well as the final solutions. He enjoyed the discussion and debate before he made a decision and wanted to know other people’s opinions, but all decisions were made ultimately by himself.

He encouraged people that ensuring profit is the responsibility of the president of the OBU, and the president only. The rest of the organization’s members should focus on their own work: quality, development, sales and service and should suggest any ideas helpful to the management. It is then up to the president to decide which ideas should be implemented to align the efforts into a profitable format. These final decisions are, he always repeated, ultimately the president’s responsibility and authority.

### **Workaholic**

Before he became the president of the A/C OBU, he had worked for the domestic sales department for more than twenty years. There was a famous story of his enthusiasm for work, which tells that he came to the office every day except just two days during the

whole year: one day for the lunar new year day and another day for the Korean thanks giving day (no holidays, no weekends and no duty-off days for him). He was a real workaholic from seven o'clock a.m to midnight, reading the project report, analyzing the sales trends, and presiding over several meetings. Mr. KG Lee, the senior general manager of the engineering department who joined a special project (21<sup>st</sup> century's vision of A/C OBU), remembered:

“Sometimes I could not go home 3 or 4 days consecutively because Mr. Kim visited the project room at any time and asked how the project was going and what the results would be...moreover, he would all of a sudden order an answer on certain difficult problems by the next Monday... I could not help but simulate many different ways to make a feasible answer to him as correct as possible by the next Monday... giving up my weekend”.

### **Quality Control**

Even though he was such a rigid and strong president, he got mad when he found any quality problems in the production line or field claims from the customers. He set his first priority of management as ‘quality’ by providing zero-defect products and services to the customers. He ordered the hanging of the slogan “To catch a worm in my house, I would burn down my house” and “We do not cross the street on a red signal” on every wall and column to be seen and remembered by every person.

There was a ten day quality system audit from the British Standard Institute (BSI) to achieve ISO 9000 (the most admirable quality assurance certificate) in 1993. Mr. Kim announced to all members that our goal was not only to achieve the ISO certificate, but to achieve the ISO certificate 'without' any NCRs (Non Conformity Record) from the distinguished British inspector as problems of quality. The inspection results must be perfect; there should be no NCRs, no recommendations and no observation items from the inspector. Before the inspector arrived at the hotel, the president ordered a staff member to go to the room and check the temperature, perfume and room condition and to find any hairlines dropped on the bed. He was also obsessed about the quality of the hotel room service and other conveniences such as food and traffic and so on.

For the ten day intensive quality audit on the overall quality of the system, from product planning and design to quality control, manufacturing, sales, and service, the inspector could not find any NCRs or recommendations. The result was zero-defect; it was perfect.

## 2-2. Why Value Game instead of Volume Game ?

His main target was to make profits in his first year. To do so, he had realized that he should focus on the domestic market, since he knew well the sales network after his twenty years of experience in domestic sales and it looked possible once the weather helped the air conditioner business. On the other hand, there were weaker resources for overseas marketing and sales compared to those of the domestic market. He stressed the importance of the domestic market with the stabilization policy – value game instead of volume game – in order to focus on hard financial results and in his first year,

he forecasted in a conservative way to avoid the risk of investment and precedent production. In 1991, his first year as the president of the A/C OBU, the summer was extremely hot, and he gained outstanding profit within the A/C OBU's history with 184.9 billion Won's sales and 28.9 billion Won's net profit.

He spurred the sales of the domestic market in the following year. Unfortunately, however, the summer weather in 1992 was abnormally cold and there was no signal (potential demand) from the market until March and April. Emergency meetings were held in Mr. Kim's room every day and night to dispose of the stocks in the warehouse, and Mr. Kim decided to organize a Task Force Team in the export department. He dispatched two general managers to the export department, one from the engineering department and another one from the quality control department, and divided the roles and responsibilities of the export department into three regional areas.

However, it was too late to convert the domestic stocks to the overseas market in April and May and attractiveness to buyers was lost due to the seasonality of sales in many countries. Moreover, organizational conflicts arose between the existing export members and the new members from the task force team as roles and authority were overtaken by the engineering general managers. The sales results as well as profits were naturally worse than before and these serious conditions continued to the following year due to the Korean cold summer and passive overseas

marketing activity. 1993's financial results were the worst in their history; 147 billion Won in sales and a loss of 4.6 billion Won in 1992, and 160 billion Won in sales and a loss of 32.1 billion Won in 1993.

Even though Mr. Kim recorded a huge deficit and was moved to another OBU at the end of 1993, the CEO and top management recognized the potential growth possibility of the air conditioner business. Also, they highly evaluated Mr. Kim's efforts and devotions to the product's quality as there were no serious or significant quality claims or problems. Mr. Kim was promoted to senior managing director and transferred to another OBU, and he is now the president of one of LG's satellite companies.

### **3. The Volume Game with Value in Mr. Song's Era**

#### **3-1. Background of New President of A/C OBU**

When Mr. Kim held the power for three years with charismatic leadership, the most difficult position was for the plant manager, the second highest position in the OBU. Mr. J.I Song, plant manager and general manager, was promoted to executive director and appointed as the new president of the A/C OBU when former president Mr. Kim moved to another OBU in the January of 1994. Mr. Song was the very person who was the most leading and excellent engineer in his peer group in his early days. Mr. Song, born in 1943, entered LG in the January of 1971 as a design engineer and was promoted to manager in 1974 and to general manager of the production department in 1981. He stayed in the general manager position for 13 years until he was promoted to executive director in 1994.



As there were some production problems in his products, he was jointly responsible for claims with the quality control department. He moved to several positions such as the service division, the motor factory and the production and engineering research laboratory and eventually he returned to the A/C OBU as plant manager in 1991, and was promoted to president and executive director of the A/C OBU in 1994. In retrospect, he says:

“Those days were the most difficult time in my life. For more than ten years I had moved to so many departments and divisions without any particular position. I was the first man who was promoted to general manager in my peer group, but I was the last person who became director in my group. After my experiences, every year I call the people who fail in promotion and encourage them that the real winners are the people who can laugh in the end. I always tell them not to be shy to fail in promotion, but to be shy not to do their best, and let them try again until they achieve their goals.”

### **3-2. Change Management**

#### **Empowerment**

As soon as Mr. Song became the president of the A/C OBU, he felt that the A/C OBU was a rigid and vertical organization. Everyone had been

looking upward to the president of the OBU, under the charismatic leadership of the former president. He realized that a vertical organization could not be effective on such a basis because it would eventually become risk averse: distance would build up between top management and line management, departments and sections within the organization would become self-chartered, both in human and financial areas.

One of Mr. Song's first actions as president was to empower the individuals. Before Mr. Song came, everything was decided by the president, and also, detailed action plans were directed by the president, so the other general managers had relatively low responsibility and authority. Mr. Song wanted to change these habits by giving more power to his subordinates. Sometimes, even though somebody made a wonderful presentation, he asked Mr. Song to give him the direction or conclusion at the end, but Mr. Song would ask him in reply:

“You gave me such a nice presentation and investigated fundamental causes and effects. That means you are the expert in this field and you are more intelligent than me. I want to ask you what your own conclusions are. Please give me your smart answer or direction.”

He had no intention to shift the responsibility to his subordinates, but he really wanted all people to consider deeply the basic problems and look for final results by themselves, and not to rely on or wait for the top management's decisions. “Everybody should make

his own answer on certain subjects and be expert in his field”; he stressed the importance of professionalism.

## Motivation

Even though LG had kept the highest market share in the Korean market, it was difficult to find the name in the world leading company list in the air conditioner field. Due to the aggressive precedent of production before the summer and the hot weather, in 1994, during the first year of Mr. Song’s inauguration, the A/C OBU turned the previous financial losses to profit; Sales were increased by 40 % (223 billion Won compared to 160 billion Won in 1993) and profit was 4.0 billion Won in comparison to a 32 billion Won deficit in 1993. It became the milestone of the year, opening the era of the growing air conditioner business. See Fig.13 “The financial performance of LG A/C OBU” in Chapter III.

In 1996, through business analysis and strategic planning, LG top management and staff selected three items in LG’s corporate level which had the most competitive advantages and lucrative business possibilities for the future: they were the CD-ROM, monitor and air conditioner. ‘Selection and Concentration’ was the business motto in LG at that time and vice chairman, Mr. John Koo, decided to reallocate all resources and human power, and give financial and institutional support to these three OBUs. The mission given to the A/C OBU was to be in the world’s top 3 market share by the year 2000.

Every member in the A/C OBU was surprised at the news and was doubtful about keeping the mission as their competitors were too far away from LG in sales and

quality; Matsushita, Mitsubishi, Hitachi, Sanyo, Toshiba and Fujitsu in Japan, Fedders, Whirlpool and General Electric in USA, and Electrolux and Airwell in Europe. LG was far behind these reputable brands and had no overseas companies or joint ventures, to serve as base camps for manufacturing and sales in other countries until 1995.

Mr. Song aimed to be in the world's top 3 and made a three year plan to achieve this goal: he ordered an expansion of human resources in the export department and restructured the OBU's organization and product development system for quick response to overseas customer demand, as much of the production system and organization had previously been oriented to domestic sales and services. To avoid the economic bloc and import tariff, he started to establish joint ventures in China, India and South East Asia for the domestic market, in Mexico for the base camp of North-and-Latin America, and in Turkey for Europe and the emerging market. He also emphasized the importance of technological collaboration with third countries and niche markets such as Libya, Tunisia and Argentina among others, in which direct sales and business are prohibited or regulated by the local government.

In 1995, sales were increased by 2.3 times and profit was also increased by nearly 12 times compared to the previous year. Sales/profit was 505/46.7 billion Won in 1995, compared to 223/4 billion Won in 1994. He stressed a mindset for globalization and professionalism, to compete with the global and multi national companies:

“We have been domestic-oriented people until now, and we must change our

mindset. Our competitors are not Korean companies any more; our real competitor is Matsushita, the largest player in the world in the air conditioner business. From now on anybody of the A/C OBU must be on the plane at any time of the year regardless of if it is day or night, weekday or weekend. That means any member of the A/C OBU must be working in an overseas country at any time. If you have to go to France for a business trip, you should visit Italy and Spain to see the real situation of the market, and meet our customers to listen to their voices. Also you must learn the culture, life style, language and particular habits of each country to understand the market.”

He empowered the general managers to sign for and approve members’ overseas business trips at any time as he believed in his general managers and made the general managers believe in their subordinates. Every staff and worker in the A/C OBU was motivated by his outstanding leadership and was confident in the success of the goal of ‘world top 3’.

### **Growth Strategy**

To overcome the financial difficulties and seasonality of the sales of the products, Mr. Song realized that the most efficient survival strategy was to increase the production capacity, in order to maximize the effect of economy of scale. Due to high initial investment, the entry barriers as well as the exit barriers are very high. Mr. Song’s personal characteristics, as a real risk lover, made the rapid expansion in R&D investment, production capacity and human resources for global competition possible.

General Electric, LG, and a Chinese local company had once investigated and considered a huge joint investment in China for over two years, as General Electric considered and simulated many factors and environmental changes and hesitated over investment for an extensive period of time. Mr. Song and corporate staff finally decided to separate and exclude General Electric from investment, and then accelerated the establishment of the joint venture in Tian Jin in China with 200,000 units of annual production capacity in 1995. LG rapidly expanded the production capacity every year, thanks to the Chinese-oriented product development and customer-oriented marketing under a special task force team: production capacity was 500,000 units in 1998 and 800,000 units in 1999. Their goal is to be in the top 3 in China with 1 million unit sales in the year 2000.

Mr. Song also established joint ventures in India (1997), Turkey (1998) and Mexico (1999) and added air conditioner production into the Philippines and Indonesian joint ventures (1996). He consulted Mckinsey and Company in 1994 to see the global market more broadly and extracted the new marketing concept, PMS (Product Market Strategy which differentiates marketing strategy according to regional characteristics), to be used in the USA, Taiwan, Saudi Arabia and Australia and so forth in order to find the best way to increase sales in each market. He hunted and called experts in export departments who had experiences in LG's overseas offices in the US, Italy, Africa and others as he found that those experts are the very people who knew the market above all others and gave all authority to cover the regional areas.

With his aggressive attitude towards the global market, many global and multi national companies visited LG for the global sourcing of air conditioners, especially General Electric, Westinghouse and Sears Roebuck in the U.S., Delonghi from Italy, NEC from Hong Kong (Japan), Email from Australia and Electrolux from Sweden for the OEM (Original Equipment Manufacturer) business, as they had lost their price competitiveness and quality. Even though Mr. Song tried to increase LG's own brand's equity, he accepted most of the proposals to achieve the economies of scale first.

In 1999, LG became the second largest player in the U.S. with a 15 % market share, just behind Fedders (31.5 %). The other followers were Whirlpool (5 %), General Electric (4 %) and Matsushita (4 %). Also, LG became the No.1 player in the air conditioner business in 20 countries in the world including Australia, Saudi Arabia and Russia among many others. To penetrate the Russian market, Mr. Song dispatched many task force teams for two or three years, and found that Russian people felt a strong need for air conditioners because they are so accustomed to cold weather and they easily felt hot even in 20°C weather. They also needed supplementary heating appliances during the cold winter. Mr. Song ordered to develop customized air conditioners suitable for the Russian market: heat pump air conditioners equipped with heating functions for the winter.

After several year's investigation and field research including customer's interviews, LG found they should overcome the seasonality of the air conditioner- compared to the high prices consumers paid, the usage period in houses was just 10 ~ 15 days during the whole year. Mr. Song started to study how the air conditioners could be used during the

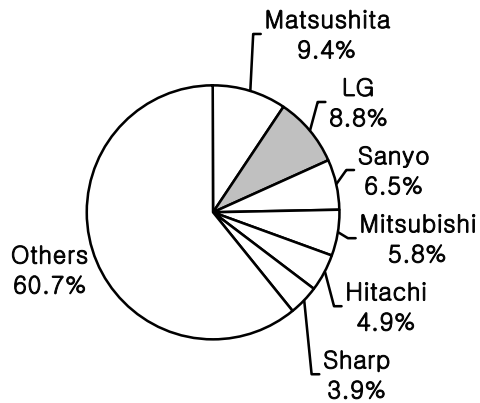
whole year and how to increase the utilization of the product. Mr. SD Kim, general manager of the engineering department and Dr. SH Lee of R&D Lab. insisted:

“We developed and added the ‘Light-Catalyst Plasma’ air purifying function to the air conditioner. The air purifier removes the smoke and smells and cleans the polluted air through chemical breakdown, and also removes the substances that generate allergies in the human body such as mildew and bacteria in the indoor air and ticks or pet’s fur on the carpet or bed in the living room. We have kept the leading market share in Korea for many years, and our real mission in the R&D department is how to develop and merchandise customer-oriented and convenient products for the people.”

The A/C OBU shortened their goal by 1 year, and they became the second top maker in the world in 1999 with an 8.8 % global market share, behind Matsushita at 9.4 %. Mr. Song changed the mission by himself and strongly announced, “We cannot be satisfied with number two. Our ultimate goal is to be the number one with an 18 % market share in the world by 2005. There is no reason we cannot do that. We have outstanding basic technology, dynamic human power, high pride and self-confidence.” The year 2005 was seriously investigated and selected according to the staff’s considerable simulation and market consulting, but internally Mr. Song made his own plan in his mind that he would achieve this goal by 2003. See Fig. 14 for the global major players’ market share of 1999.



<Fig 14> A/C Market Share of Global Players as of 1999



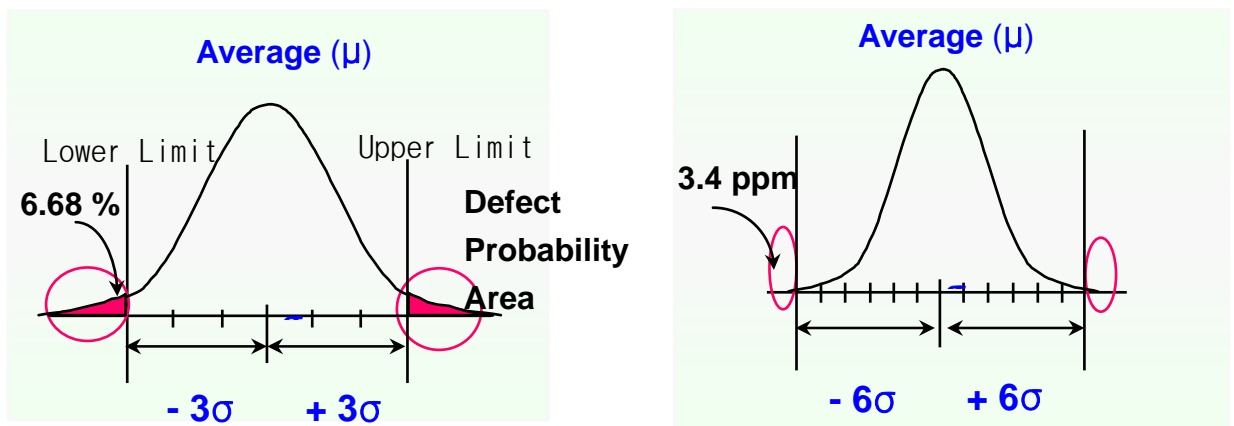
(Source: Booz-Allen & Hamilton, Feb 2000)

### 3-3. The Advent of the 6 $\sigma$ (sigma) Era

For the last several years, LG has increased quality movement and productivity innovation programs such as the TQM (Total Quality Management), the 3 By 3 Campaign (A managerial activity to increase productivity and financial performance three times within three years in preparation for the Korean Won's fluctuation), and the 100 PPM Campaign (100 Parts Per Million: 100 defects out of a production of 1 million, in other words, a 0.01 % defect rate). However, they could not be satisfied with these old performance indexes and decided to employ the '6  $\sigma$ ' concept from Motorola and General Electric in LG Group's corporate level in 1997. If a company achieves a 3  $\sigma$  level, its defect rate would be statistically 6.68 %, in contrast to 0.62 % for a 4  $\sigma$  level, 0.023 % for a 5  $\sigma$  level and 0.00034 % for a 6  $\sigma$  level. Mr. SB Son, the MBB (Master Black Belt) and 6  $\sigma$  team leader explained the background of the concept:

“If we keep our quality level at 99 %, it means that 579 mails are being lost in Korea everyday due to the postman’s mistake or calculation errors, and 2 landing accidents in the USA can be happening in an airport every day due to the air controller’s computational errors. That’s why we should not be satisfied with our quality level. Our quality goal should be changed and stretched to a 6  $\sigma$  level (0.00034 % defect rate in 99.99966 % quality level) from 100 PPM level (0.01 % defect rate in 99.99 % quality level).”

<Fig. 15> Comparison of Quality Level between 3  $\sigma$  & 6  $\sigma$

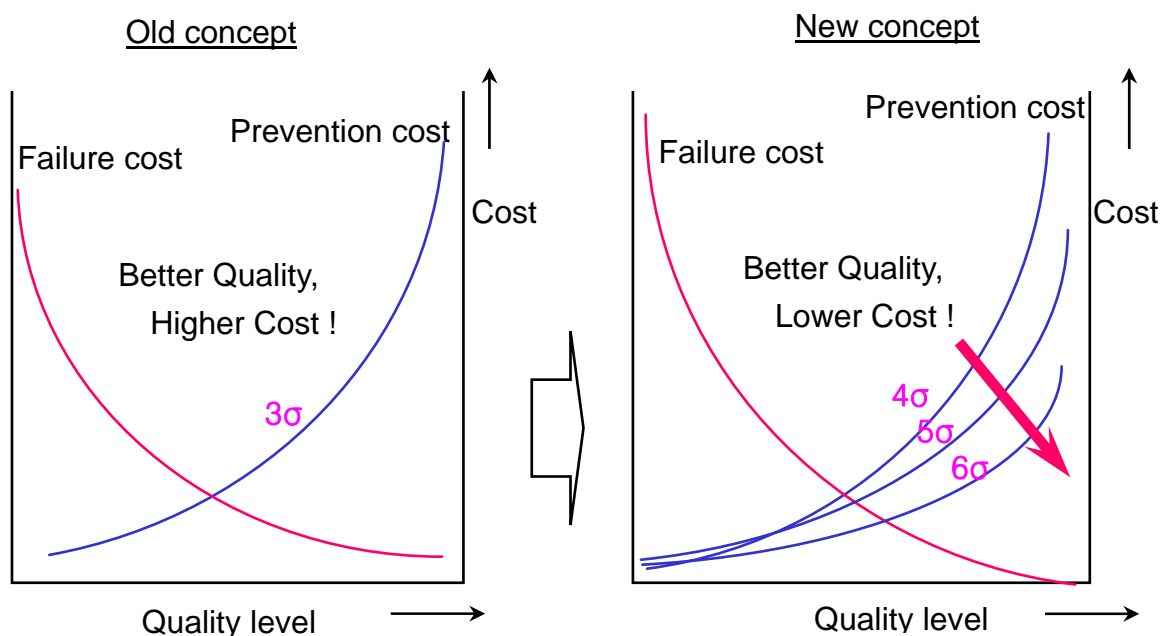


(Source: 6  $\sigma$  Team Report of LG Electronics)

A 6  $\sigma$  level appealed to the top management because all the CTQ (Critical factors To Quality) in overall corporate management, including production, sales, finance and customer service as well as quality, have been statistically analyzed through the statistical software (Mini tab) and it has been found that 6  $\sigma$  helps to find the most feasible conditions and solutions in figures theoretically. Finally, LG decided to employ this concept as a tool for achieving the Group’s management innovation, by calculating

all the gaps between the stretched goals and the current performance mathematically. Mr. Song also realized that they should change their thinking with respect to quality level and cost. Traditionally, prevention and inspection costs have been thought to increase along with the quality level, but he found that the higher the quality level achieved, the lower the costs paid; the higher the quality is, the less the costs are.

<Fig. 16> Quality Concept of Old & New Paradigm (3  $\sigma$  vs 6  $\sigma$ ) .



(Source: 6  $\sigma$  Team Report of LG Electronics)

Mr. Song was shocked by the report explaining that Motorola reduced quality costs by 3.2 billion dollars over five years from 1987 to 1992 by achieving a 5.5  $\sigma$  level in 1992, and that General Electric made financial benefits of nearly 1.2 billion dollars in 1998. (GE annual report, 1998 February, The Vision of 6  $\sigma$  –Mikel Herry). The specialists in the 6  $\sigma$  level are classified with 3 levels as MBB (Master Black Belt), BB (Black Belt) and GB (Green Belt). The 6  $\sigma$  team members and accelerators should be the MBBs.

They are technical leaders who train the BBs and GBs, and investigate and evaluate the performance of every project, as all employees should finish a project every year. The BBs are project leaders who are assigned to a task force team to make managerial or technical solutions and GBs are the project or team members who are assigned to a similar task force. In order to be a team leader, general manager, or supervisor in LG, the first qualification is to be a GB, as of 1999.

Besides the 6  $\sigma$  activity, Mr. Song stressed the efficiency and performance of weekly meetings:

- Team Leader's weekly meeting on Monday.
- Cost Review Meeting on Tuesday related to finances and purchasing.
- Product Development Meeting on Wednesday related to engineering and R&D.
- Quality Review Meeting on Thursday related to quality control and production.
- Overseas Market Review Meeting, bi-weekly on Friday, related to the export department.
- Management Performance Meeting, bi-weekly on Friday, with all team leaders and general managers.

Why did he propose so many meetings ? The A/C OBU's annual sales were already near 1 trillion Won in 2000 with 358 white collars and 585 factory workers as of February 2000.

## **IV. The Future of LG Air Conditioner OBU**

### **1. Key Success Factors**

#### **1-1. Product Leadership**

For more than 10 years, one of the biggest customers of LG's microwave oven OBU was Sears Roebuck USA, and inspectors and consultants were dispatched from A.T. Kerny every year to evaluate the overall quality system, production and logistics of LG. In 1997, unfortunately, they evaluated and criticized the LG microwave oven as a 'product follower' with "no advanced technology and no product innovation...LG's microwave oven is just a follower of multi-national brands, they have no product leadership..."

The top management of the Home Appliance Division was surprised and embarrassed at the results as such comments can have an effect on the evaluation and negotiation of other products. Mr. Song knew that the traditional definition of "product leadership" focused on gaining competitive advantage through superior product performance, features and functionality, as Intel had product leadership by having the next generation of ICs ready for release while competitors were copying the current products. At that time, he made a new definition of product leadership which consists of the following elements:

- Cost leadership that enables competitive pricing
- Continuing incremental improvements in design, features and functionality

- Customized products to meet specific customer and channel needs

To have product leadership, he stressed the importance of sustainable cost competitiveness, customized channel management and market intelligence, as well as product performance. This year, in 2000, Sears awarded the A/C OBU as This Year's Best Supplier to appreciate its quality and delivery.

### **1-2. Cost Competitiveness**

Reducing the cost of raw materials and components without lowering the quality is the key element for gaining cost competitiveness. So many advanced manufacturers and skilful researchers have tried to reduce to develop cost reduction programs. In particular, Japanese VE (Value Engineering) is famous for its scientific and strict analysis of cost reduction programs.

However, Mr. Song introduced the Vic21<sup>12)</sup> Program whose main philosophy was a "breakthrough" and which stated that "A 5 % cost reduction is impossible, but a 30 % cost reduction is possible". Until then, engineers could not imagine reducing the cost by 30 % at once, as they could not break the paradigm of the basic design. For example, if a big case consists of 5 pieces of small plastics, some material costs, such as for 30 screws and 500 grams adhesives as well as worker's manufacturing costs, would be required to assemble the 5 pieces. Normally, the engineers had investigated how to reduce the number of screws from 30 to 10, or the amount of the adhesive from 500 gram to 200 or 300 gram. They could not change the thinking that the case should

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<sup>12)</sup> Vision realization through Innovation of products and process for Customer satisfaction toward 21<sup>st</sup> C.

consist of 5 pieces, as others could not before them. Mr. Song, however, suggested making the big case of a single piece of plastic through innovative design improvement. No screws, no adhesives and no workers are required for the supplementary assembly.

Last year's cost innovation amount was 40 billion Won, and this year the A/C OBU aspires to 50 billion Won in cost innovation in overall management from design, procurement, production and quality.

### **1-3. Growth Strategy**

The main engine of the A/C OBU's continuing growth was Mr. Song's growth strategy, accompanied by hard results, even though the air conditioner business was a mature industry world-wide. While keeping a number one position in Korea, he quickly turned his eyes to the international market in his early days, and turned the IMF crisis into an opportunity when other local competitors were suffering from the depressed domestic market.

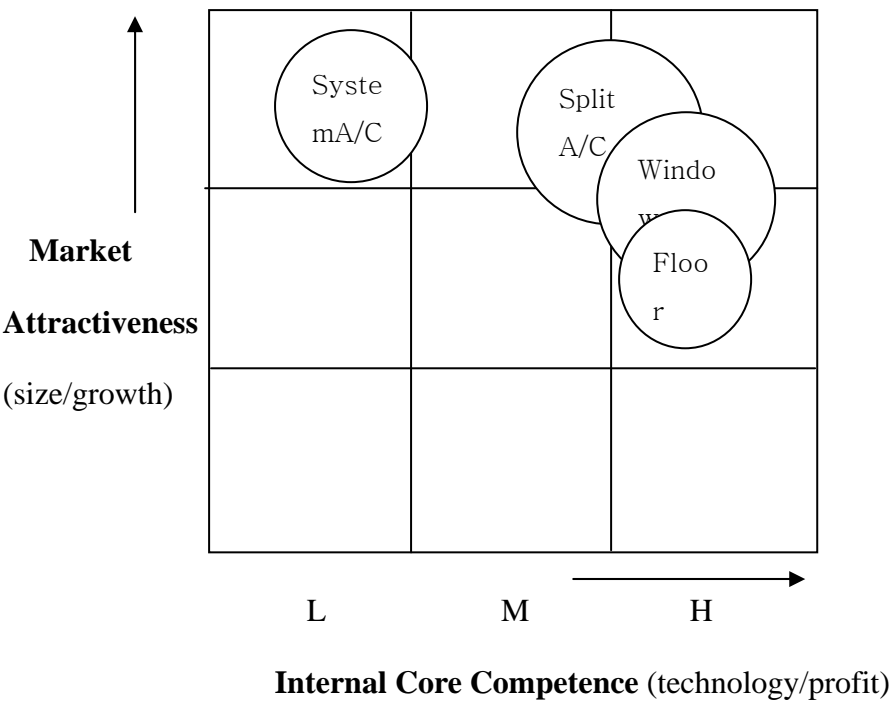
Now, to be number one in the world, he realized that it was time to restructure the business domain and analyze the A/C OBU's internal competency. Also, with the help of Booz Allen & Hamilton Inc., he formulated the A/C OBU's top-tier strategy. In addition, he noticed that the market value and potential business possibilities of the system air conditioner <sup>13)</sup>, which was not included in LG's business domain, would rapidly grow in the near future. He decided to enter the system air conditioner business in 1998 to make it the next generation of business for the A/C OBU. It was another

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<sup>13)</sup> order-based and customized air conditioners

meaningful challenge to him.

<Fig.17> Analysis of Product Portfolio of Air Conditioner



2. Top Tier Strategy

2-1. Restructuring the Business Domain

To be the top-tier player in the industry, Booz-Allen and the task force team recommended that LG should compete in the unitary air conditioner business and in the Japanese market. The team recommended that LG enter the unitary market in the U.S., through acquisition of a US player, and also that LG enter the Japanese market. Mr.



Song started to develop the unitary air conditioner, customized to US consumers, as he intended to segment unitary air conditioners for the export market and system air conditioners for the domestic market with product/marketing differentiation.

For a long time, he also felt that it was imperative to enter the Japanese market, as it was the biggest market and had the highest consumer price in the world (its market size is nearly 1/3 of the global market). He thought high consumer prices also gave LG an opportunity to buy its way into the market through discounting and the A/C OBU's relative cost competitiveness. It was time for LG to catch up to the Japanese cutting edge technology, such as inverter and recycling technology, by competing with Japanese local players. It would be more painful for a Japanese maker than for LG which would have little to lose.

## **2-2. Strategic Elements**

The team extracted three key elements from the proposed top-tier strategy.

**Become the best “Value for Money” competitor ...** by building an ongoing understanding of what customers value, whether they are OEMs, channels, or end-users, and by customizing product and service, and offering to provide value proposition at the lowest cost. LG should use innovation as leverage in cost control and product design to generate additional value.

**Establish LG as the “Best Partner” in the industry ...** by creating a superior, sustainable market understanding that enables LG to fill channel and customer needs better than other players. To do so, LG should develop and deploy world-class channel management capabilities that lead the market.

**Ensure the offering of full product lines to all important markets ...** by broadening products and services offered to capture shares in markets not currently served. Also, LG should fill in product offering gaps in already served markets and enter promising markets not currently served, like those of Japan and Thailand.

### **2-3. Implementation**

To implement the top-tier strategy, Mr. Song encouraged the A/C OBU to develop three key capabilities that act as leverage for the A/C OBU's core values and core competency. First, Market Intelligence: the A/C OBU should push for openness and technology to maintain a superior market understanding and use this understanding to maximize value creation by customizing what is offered with a core marketing capability.

Second, Channel Management: the A/C OBU should push for networking, partnership and technology to differentiate LG through superior service to the channels, and building win-win solutions as a best partner.

Finally, Sustainable Cost Competitiveness: By combining these two core values, the A/C OBU can push for innovation, design and process technology to maintain position and effectively compete with low cost suppliers.

### **2-4. Results and Implications**

With the expansion of the business domain, product diversification, and differentiated international marketing strategy, the A/C OBU could draw a Top-Tier Vision of 2003 by actualizing 20 % of CAGR in volume and 15 % in revenues. Its volume would be 5.25 million units out of 37 million units with a 14.2 % global market share.

Besides volume and revenues, it is important to become a truly top-tier competitor in the industry. The key to being “top-tier” is to hold a sustainable competitive advantage that allows the A/C OBU to generate uniform and stable profits. The real top-tier player is admired and/or feared by the competitors, and appreciated by their channels and customers, because they create value for the partners. The top-tier shapes the industry and sets the standards by understanding what the markets want and acting on it faster than other competitors.

## **Chapter IV. Conclusions**

The air conditioner industry has been considered a mature industry, and sometimes regarded as a declining industry, compared to the high-tech industry which includes semiconductors, genetic engineering, and the multi-media industry. However, the top management's consistent perseverance, continued R&D investment at the corporate level, and strong commitment to growth strategy, including market diversification, product leadership and cost innovation at the operational level, have made the business unit a cash cow and one of the most competitive organizations.

Within the difficult environment of a massive human exodus from the traditional manufacturing industry to venture capital or Internet business, the case of LG A/C OBU shows that the chimney economy will not fall down so easily, and gives us a lesson that remarkable and desirable results can be obtained through a decision maker's intelligent corporate and global strategies and strong leadership.

<Exhibit 1> Financial Highlights of LG Electronics

(billion Won)

	1996	1997	1998	1999
<b>Sales</b>	7,503	9,240	9,853	10,546
- Domestic	3,096	3,503	2,570	2,704
- Overseas	4,407	5,737	7,283	7,842
<b>Operating income</b>	571	798	753	684
<b>Ordinary income</b>	13	116	167	2,588
<b>Net income</b>	65	92	112	2,005
<b>Investment</b>	1,060	978	921	826
- CAPEX	626	543	494	407
- R&D	434	435	427	419
<b>Total shareholders' equity</b>	1,491	1,527	1,834	
<b>Total capital stock</b>	535	525	632	
<b>Earnings per share (Won)</b>	700	1,034	1,264	18,494

<b>Sales per share (Won)</b>	70,121	87,467	93,432	
<b>Cash flow per share (W)</b>	4,148	5,110	6,470	

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